



ALICE grid in Thailand

Chinoratt Kobdaj

8 July 2015

Dusit Thai Krabi Beach Resort,
Thailand



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Suranaree University of Technology



Royal Initiative Project



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Her Royal Highness Princess Maha



18 May 2000 DELPHI



9 Dec 2003 RSIS: Role of
Science and Technology



16 March 2009 CMS
Detector, LHC



13th April 2010 LHC
Briefing



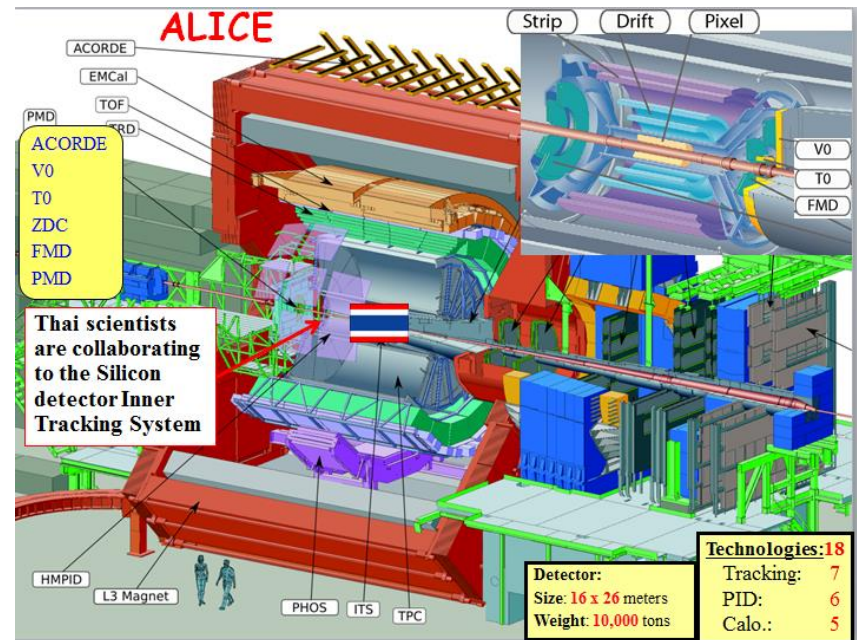
ALICE



ALICE

(A Large Ion Collider Experiment)

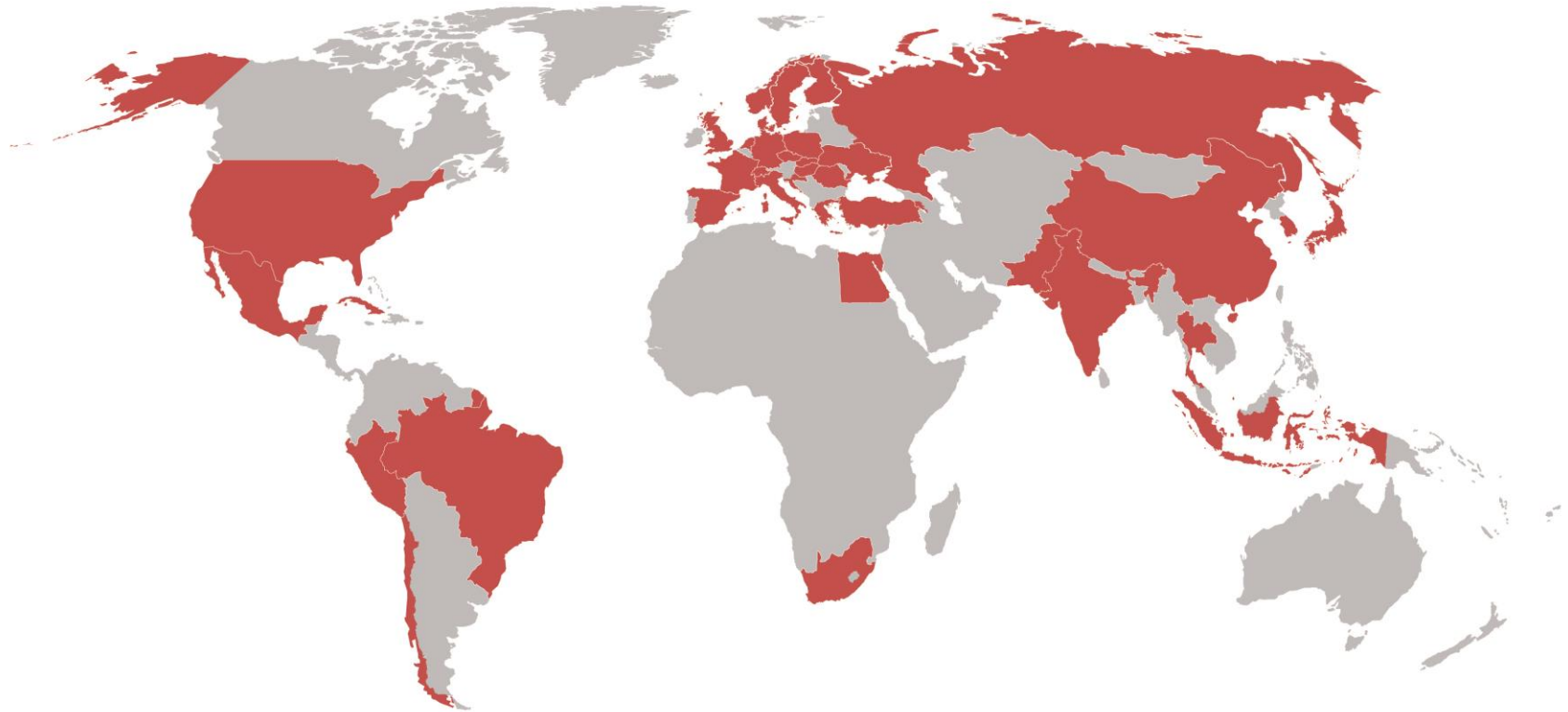
- Heavy Ion experiment
- Looks for a state called quark-gluon plasma that existed shortly after the Big Bang.



Quark-gluon plasma is a state of matter wherein quarks and gluons are deconfined.

THE ALICE COLLABORATION

37 COUNTRIES – 157 INSTITUTES – 162'456 KCHF CAPITAL COST



THE ALICE COLLABORATION

History of the ALICE Experiment:

1990-1996 Design

1992-2002 R&D

2000-2010 Construction

2002-2007 Installation

2008 -> Commissioning

4 TP addenda along the way:

1996 Muon spectrometer

1999 TRD

2006 EMCAL

2007 DCAL

2012 Lol for the Upgrade

2012-2014 R&D

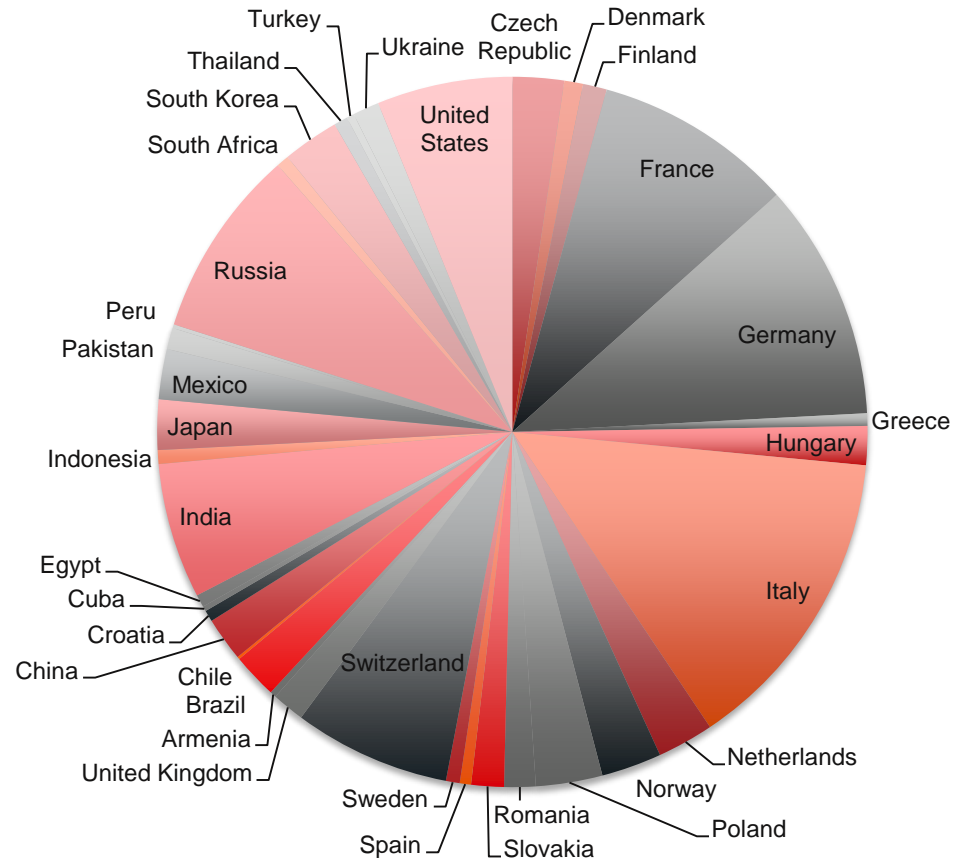
2014-2016 Procurement/Fabrication

2016-2017 Integration, pre-commissioning

2018-2019 Installation, commissioning

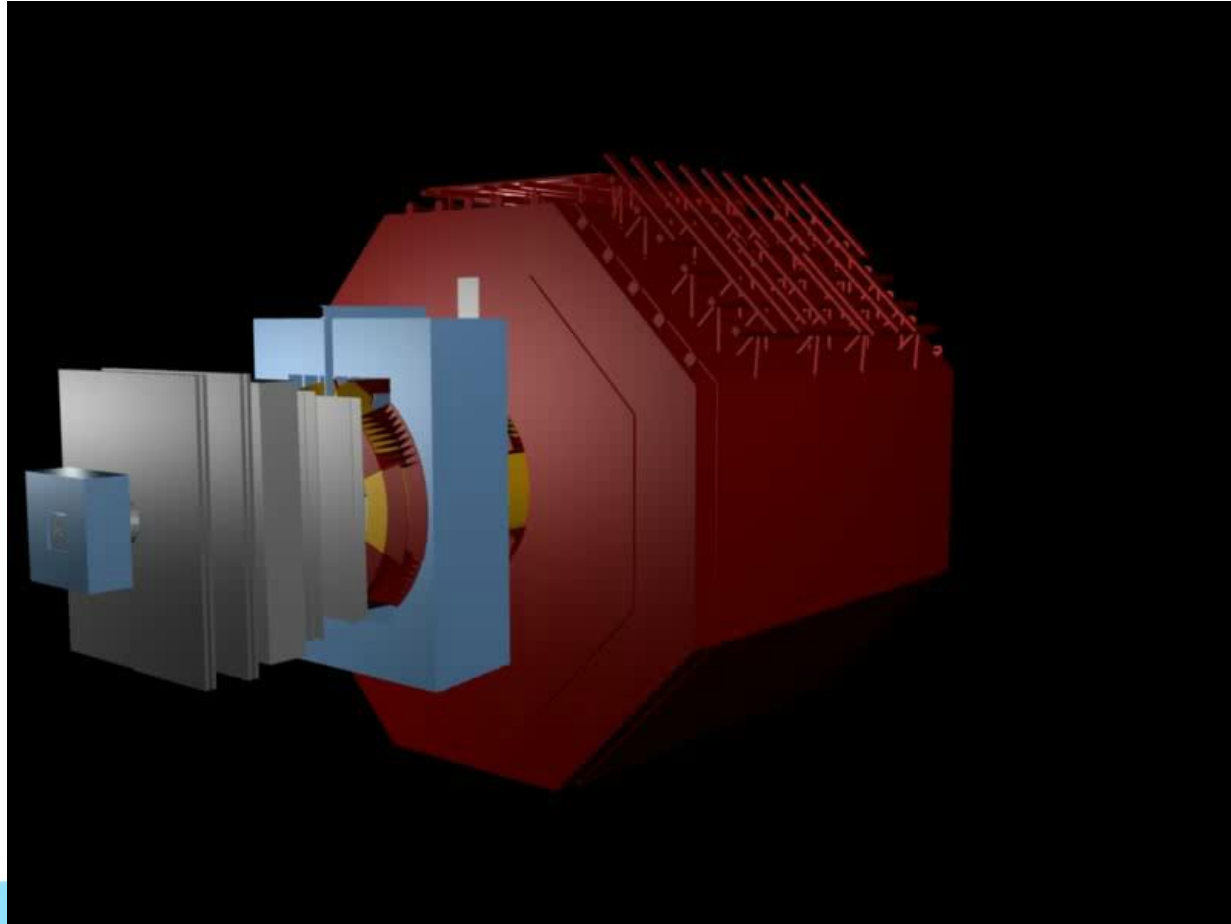
2019-2020 Full deployment of DAQ/HLT

MORE THAN 1500 MEMBERS

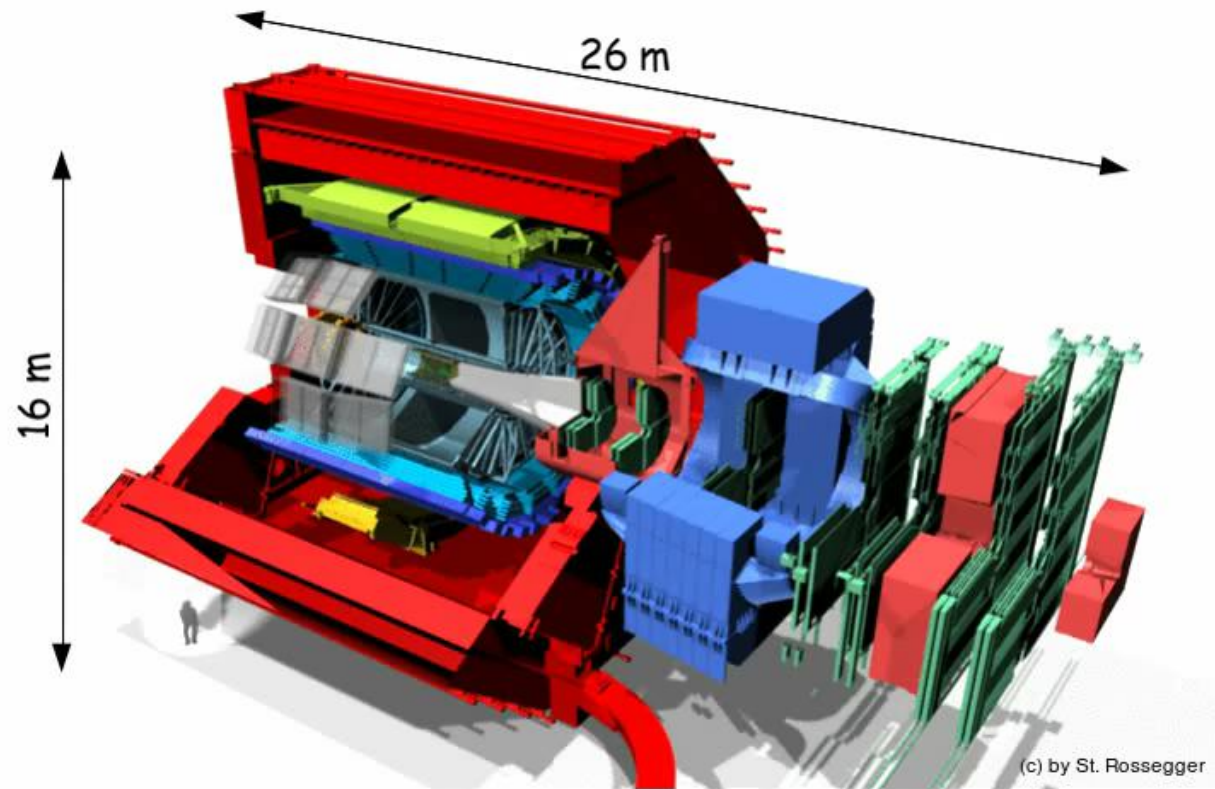


Source: Alice Collaboration data base, Sept. 1st 2014

A glance of a collision at ALICE




Inner Tracking System



ALICE-THAI COLLABORATION

GRID
OPERATION
NECTEC
a member of NSTDA

Physics
SUT




The central logo features the Thai flag on the left and the ALICE logo (a red octagon with a white starburst pattern) on the right, with the word "ALICE" written below it.

BEAM TEST FACILITY /
SENSOR
CHARACTERIZATION
SLRI



SENSOR
DEVELOPMENT
TMEC
Thai Microelectronics Center

Computing/
SENSOR
CHARACTERIZATION
KMUTT



25th December 2009 The Thai-CERN subcommittee delegates from universities and related research org has been appointed and chaired by Prof. Pairash Th



National Science and Technology
Development

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Suranaree University of Technology



Suranaree University of Technology (SUT)

- ◉ We celebrate the 25th anniversary this year (2015)
- ◉ The university campus is located at Nakhon Ratchasima province, only 250 km from Bangkok





Photo taken at Sra Patum Palace on December 13, 20



SUT is a full member of ALICE

On 13 December 2012 , there was a signing ceremony Memorandum of Understanding between SUT and ALICE.



National Electronics and Computer Technology Center (NECTEC)

- Found in 1986
- In 1991 became a national center under the National Science and Technology Development Agency (NSTDA)
- Located at Pathumthani province, 28 km north from Bangkok





Photo taken at Sra Patum Palace on October 10, 2013



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WLCG signing Ceremony

10 October 2013



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Computing Resources



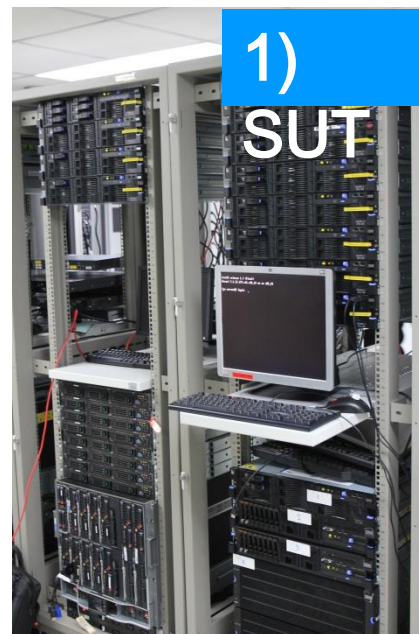
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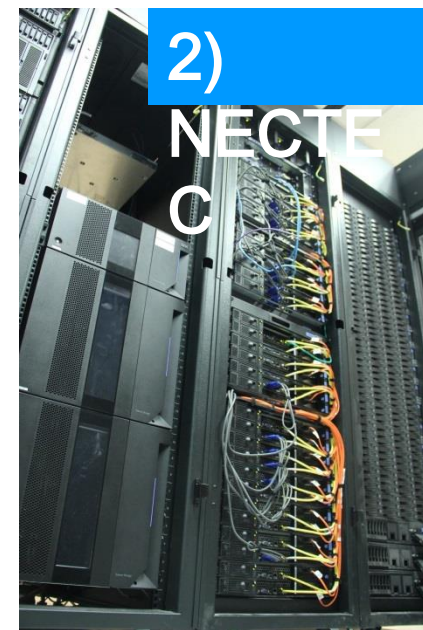
ALICE Grid site in THAILAND



- Collaborate with National Electronics and Computer Technology Center (NECTEC) to setup a Grid site for ALICE@SUT as part of the Thailand National



128 Cores IBM
x3755 M3
100 TB IBM DCS
3700

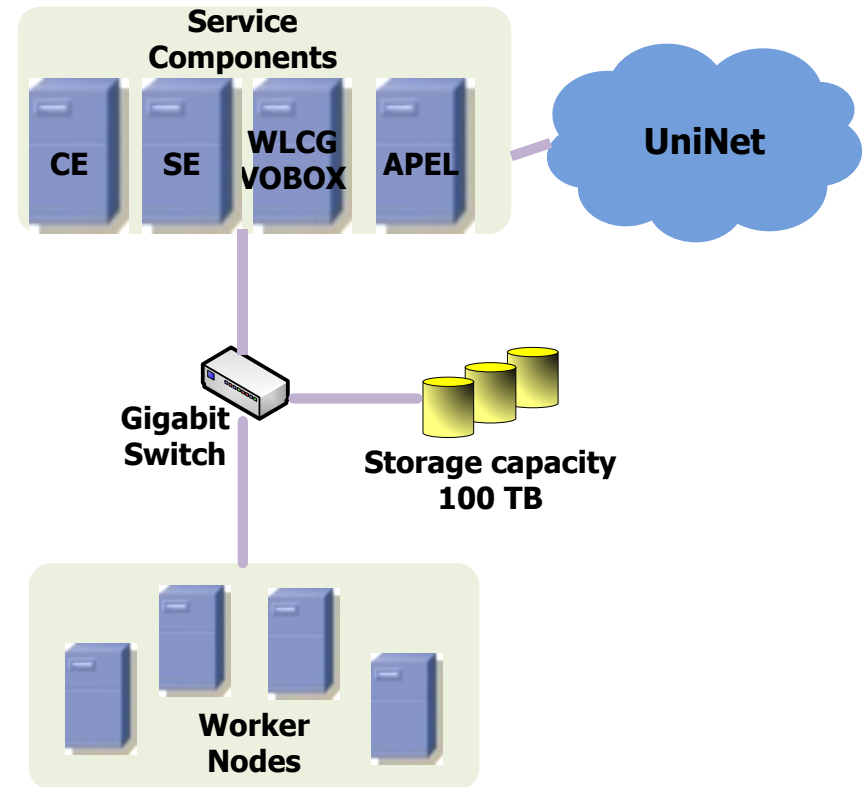


60 Cores IBM
iDataPlex d360
M3
30 TB Storage IBM DS
3512



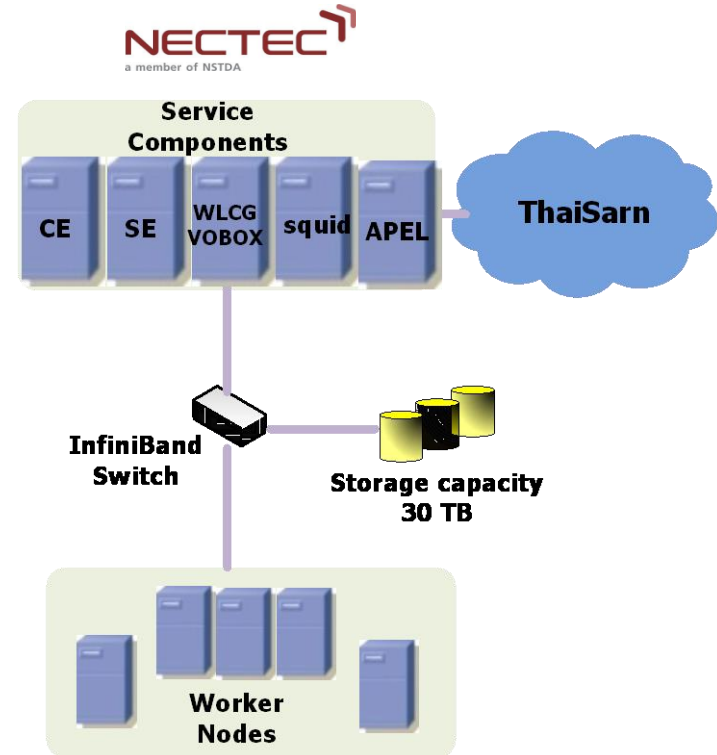
ALICE Grid resource at SUT

- 128 job slots, 2110 HEPSPEC06
- 4 nodes, 32 cores 96 GB RAM per node
- AMD Opteron 2.3 GHz
- Gigabit Ethernet switch
- OS SLC 6.4 with EMI-2 middleware
 - CE, SE, WLCG-VOBOX and Worker Nodes
 - CVMFS 2.1.15, installed on WLCG-VOBOX and all worker nodes
 - Pure Xrootd 3.1.0
 - AllEn software v2-19.218



ALICE Grid resource at NECTEC

- 60 job slots, 912 HEPSPROC06
- 5 nodes, 12 cores 42 GB RAM per node
- Intel Xeon 2.6 GHz
- Gigabit Ethernet and InfiniBand switch
- OS SLC 6.4 with EMI-2 middleware
 - CE, SE, WLCG-VOBOX, squid frontier and Worker Nodes
 - CVMFS 2.1.15, installed on WLCG-VOBOX and all worker nodes
 - Pure Xrootd 3.1.0
 - AliEn software v2-19.218



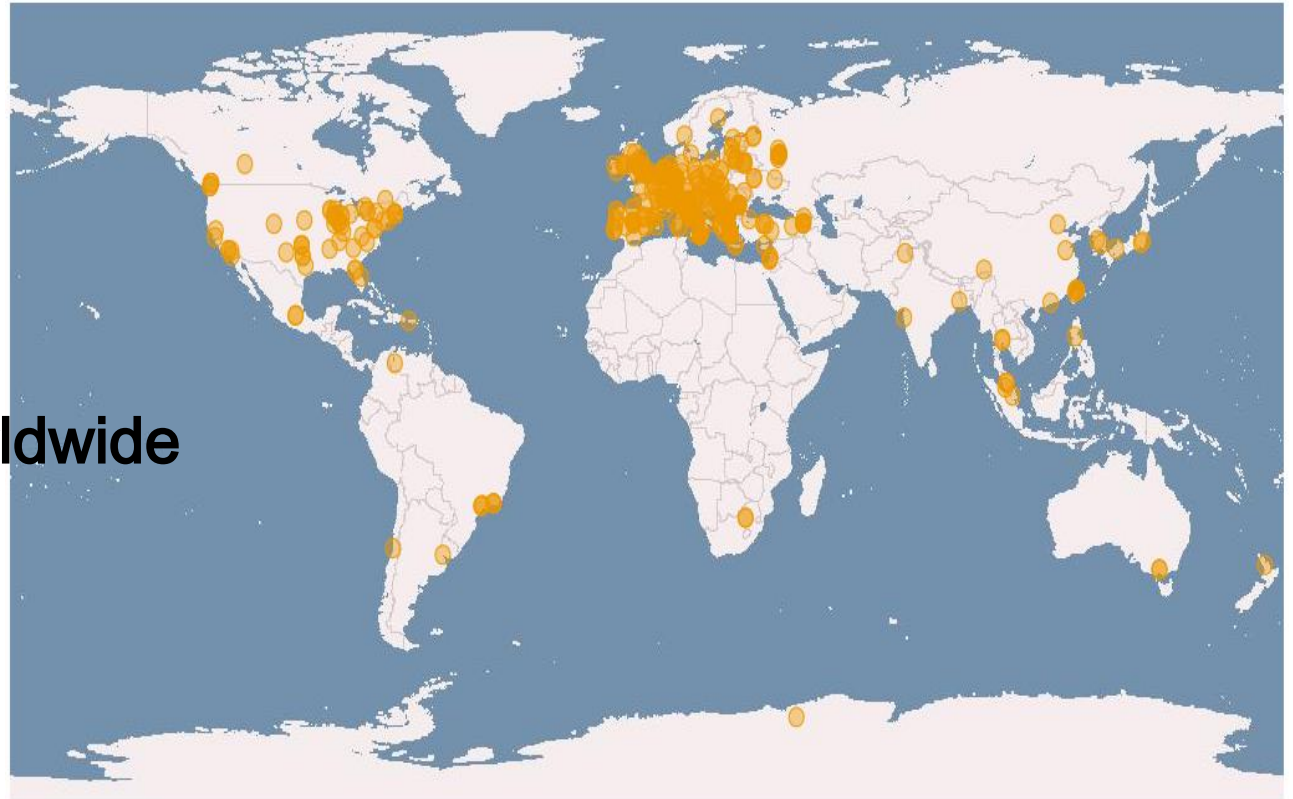
Large-Scale Simulation Research Laboratory
National Electronics and Computer Technology Center

Worldwide LHC Computing Grid



WLCG sites:

- 1 Tier0 (CERN)
- 13 Tier1s
- ~170 Tier2s
- >300 Tier3s worldwide

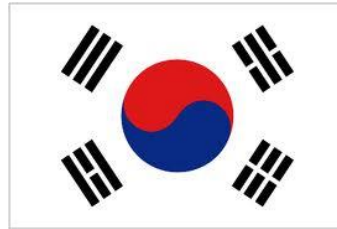
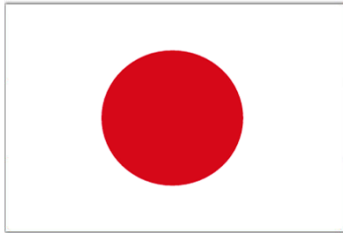


Edoardo Martelli

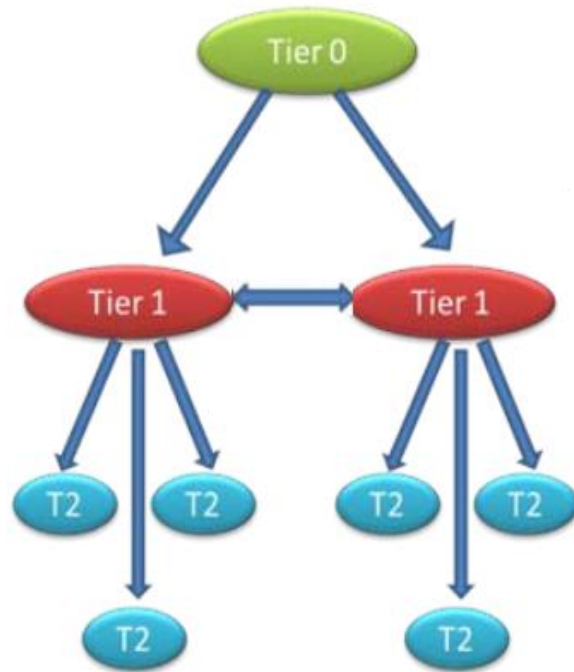
Netwo rk



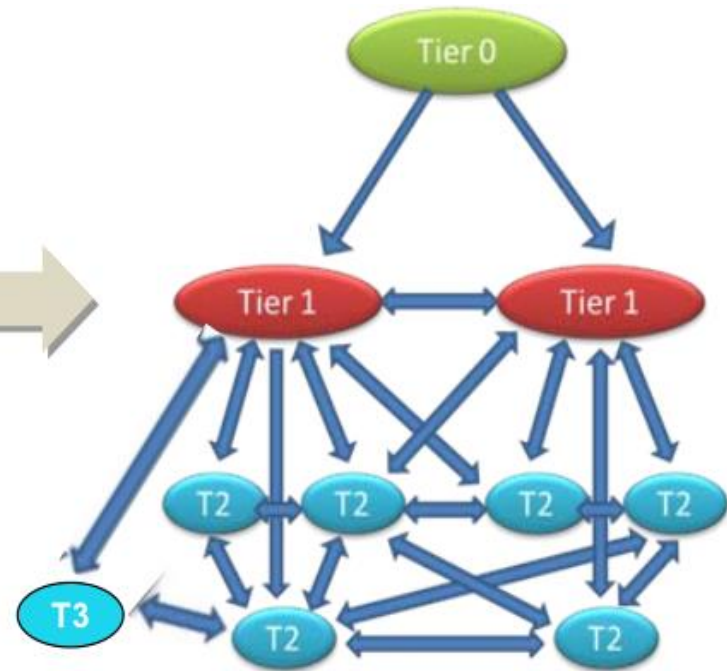
TO PROMOTE THE COLLABORATION AMONG ASIA PACIFIC COUNTRIES



Computing model evolution



Original MONARCH model



Model evolution



Site monitor

<http://alimonitor.cern.ch/map.jsp>

The screenshot shows a web browser window displaying the MonALISA Repository for ALICE. The browser's address bar shows the URL alimonitor.cern.ch/map.jsp. The page header includes the ALICE logo, the MonALISA logo, and navigation links such as "My jobs", "My home dir", "Catalogue browser", "LEGO Trains", "Administration Section", "ALICE Reports", "Alert XML Feed", "Firefox Toolbar", and "MonaLisa GUI".

The main content area features a Google Map of Thailand. A green marker is placed on the map, labeled "SUT NECTEC". Below the map, there is a legend with five colored circles and their corresponding descriptions:

- Running jobs
- Running jobs but no ML info
- Site service problem(s) prevents job execution
- No jobs match the site resources
- ML service down & no running jobs

Additional text on the map includes "Google", "แผนที่ ดาวเทียม", and "ภาพ ©2014 NASA, TerraMetrics | ข้อกำหนดในการใช้งาน". A "Map options" button is located at the bottom of the map area.



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ALICE reports <http://alimonitor.cern.ch/reports/>

Report on ALICE sites' activity (01.06.2015 - 30.06.2015)

ALICE reports

Report on ALICE sites' activity (01.06.2015 - 30.06.2015)												
Site	Group	Tier	Pledged		Delivered		Occupancy	Missing KSI2K	Efficiency	Job statistics		
			KSI2K	CPU	Wall	Wall/Pledged	Pledged - Wall	CPU/Wall	Assigned	Completed	Efficiency	
62. NECTEC	Thailand	T2	-	85.01	110.9	-	-	76.63%	7182	4351	60.58%	
86. SUT	Thailand	T2	-	275.6	297.5	-	-	92.62%	5358	4231	78.97%	



Bandwidth

SUT

Links: FDT, Kernel parameters tuning

<SUT>

Chart view »

IN from						
No.	ID	Site	Speed (Mbps)	Hops	RTT (ms)	Streams
1.	2210034	NECTEC	738.24	8	6.13	1
2.	2212362	KISTI_GSDC	352.34	12	157.81	1
3.	1976476	KISTI-CREAM	327.17	12	158.67	1
4.	2209657	Hiroshima	302.01	15	151.70	1
5.	2214075	LBL	192.95			1
6.	2212695	NERSC	184.56			1
7.	2210626	ORNL	176.17	19	307.78	1
8.	2211741	SaoPaulo	109.06	15	395.05	1
9.	2209799	Cibinong	100.67	16	55.38	1
10.	2209942	Strasbourg_IRES	100.67	17	233.05	1
11.	2214739	ISMA	92.28			1
12.	2214257	SPbSU	92.28	14	244	1

OUT to						
No.	ID	Site	Speed (Mbps)	Hops	RTT (ms)	Streams
1.	2210622	NECTEC	805.35	8	5.52	1
2.	2213308	Kolkata-CREAM	343.95	14	128.98	1
3.	2208950	GRIF_IPNO	226.50			1
4.	2211775	Trieste	192.95	16	237.74	1
5.	2209469	CERN-TRITON	167.78			1
6.	2213799	Kosice	167.78			1
7.	2208622	ISS	159.39	22	259.85	1
8.	2208749	ISS LCG	159.39	19	261.36	1
9.	2212865	KISTI_GSDC	159.39	12	157.19	1
10.	2213980	Prague	159.39	17	243.52	1
11.	2212713	Subatech	159.39	14	269.30	1
12.	1976024	KISTI-CREAM	151	10	159.64	1

<http://alimonitor.cern.ch/speed/index.jsp?site=SUT>

25.	2212338	GSI	50.33			1
26.	2211948	Itep	50.33	14	346.16	1
27.	2209776	UNAM_T1	50.33	18	336.09	1
28.	2211102	Bandung	41.95	15	59.29	1
29.	2211611	iThemba	41.95	24	449.75	1
30.	2213082	SNIC	41.95	19	270.69	1
31.	1808380	TACC	Click for history			

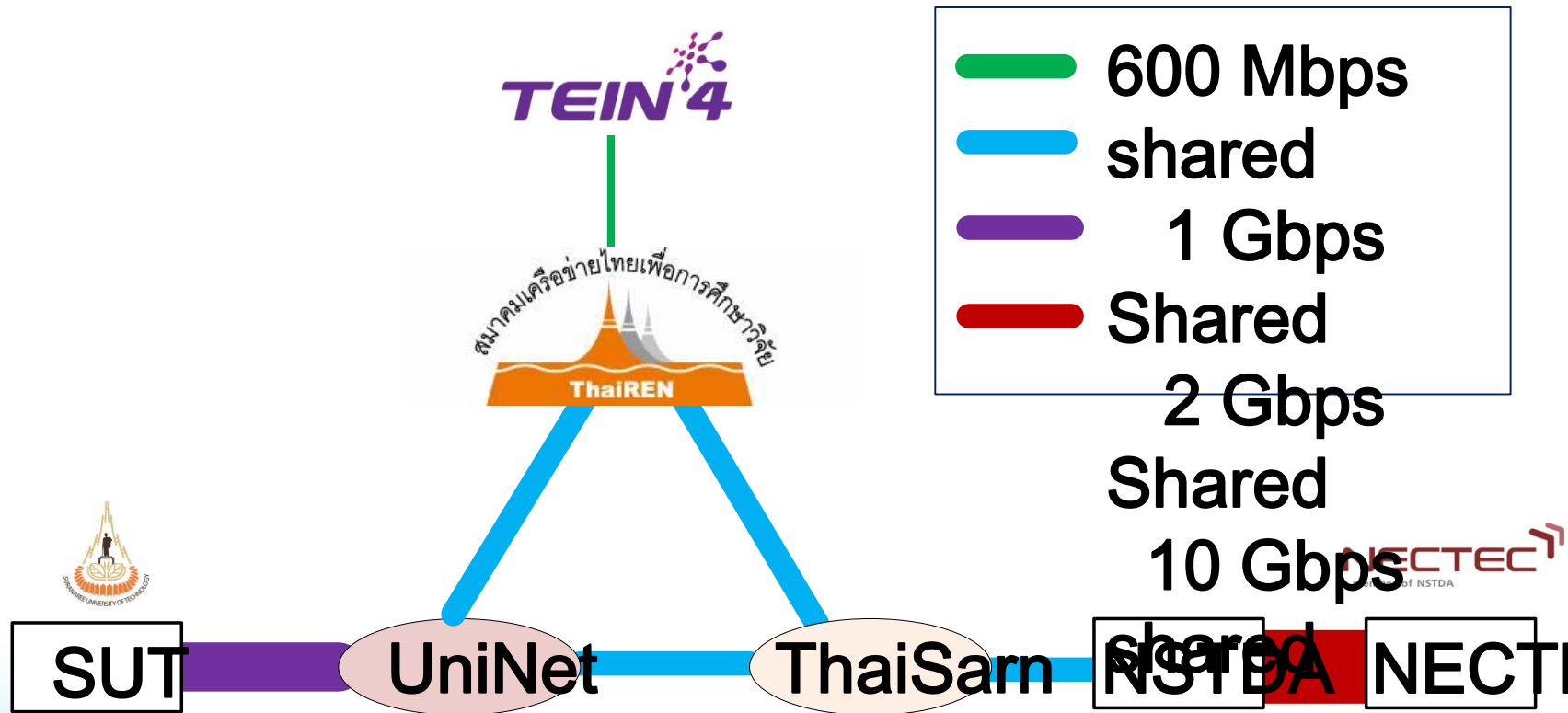
25.	2210795	Bari	109.06	18	265.43	1
26.	2211164	Birmingham	109.06			1
27.	2118662	CERN-CVMFS	109.06	18	236.31	1
28.	2213262	Cibinong	100.67	12	56.31	1
29.	2209473	Catania-VF	92.28	17	251.74	1
30.	2212527	GSI	92.28			1
31.	2204866	GSI_2	92.28			1

37.	1383501	GSI-SGE	33.56			1
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37.	2209807	Hiroshima	75.50			1
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Network Diagram Overview of THAILAND



SUT

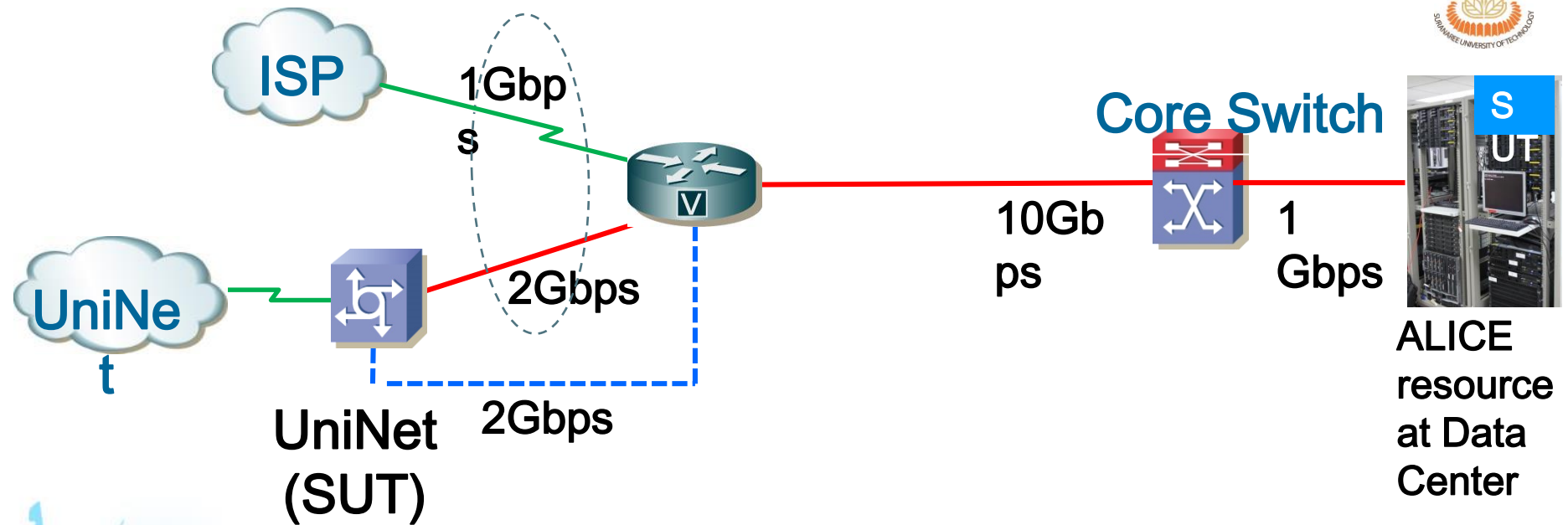
UniNet

ThaiSarn

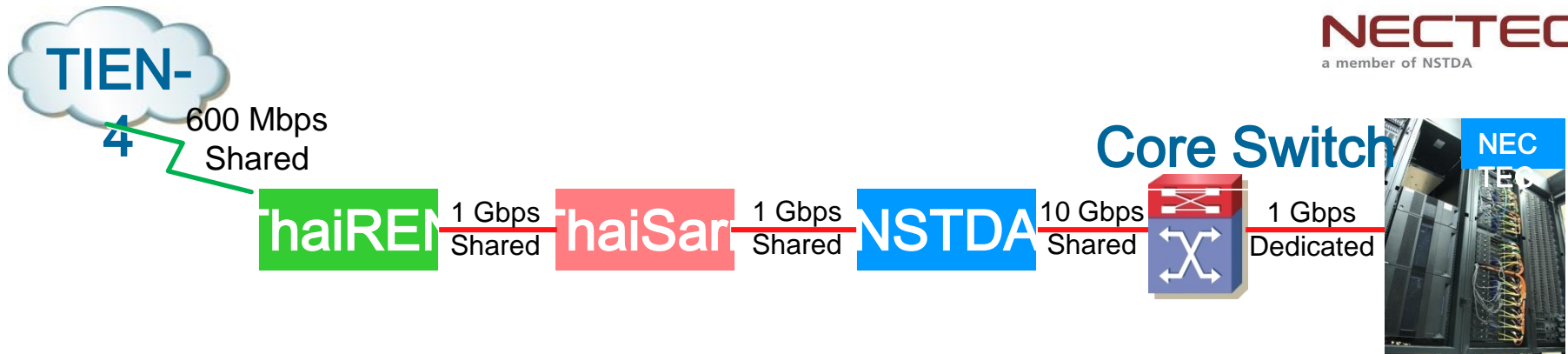
NSTDA

NECTEC

Network topology at SUT



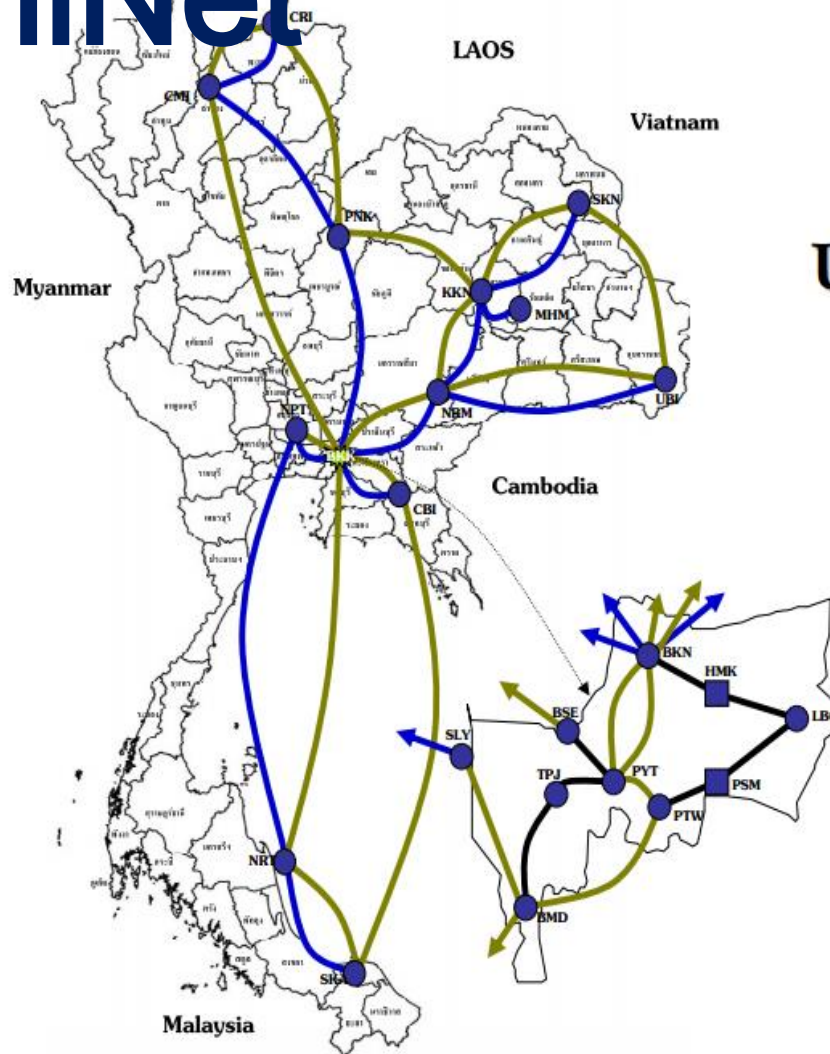
Network topology at NECTEC



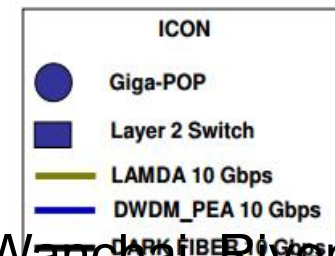
ALICE
Resource
at Data
Center



Network Provider for SU I is UniNet



UniNet2 Network
Topology



Dr. Wanchai Rivepiboon



Resource Roadmap 2016 and o



- Nothing changed
- Plan to upgrade in 2016 to either more CPUs, storage or network (subject to current performance evaluation)



- see Dr. Sornthep talk

